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ABSTRACT

An attempt is made to define and measure pupil control "behavior." In order to measure pupil control behavior, an instrument called the Pupil Control Behavior (PCB) Form was developed and tested. The 31 custodial and 34 humanistic items were randomized, and the initial version of the PCB Form was administered in 20 schools in Illinois (13 secondary and 7 elementary). A total of 2,815 usable PCB Forms were collected, representing student descriptions of 129 of the 130 teachers who participated in the investigation. The mean class size for the sample was 21 students. A one-way analysis of variance was applied to each of the questionnaire items. All of the items survived the analysis of variance test; the final PCB Form retained 20 of the original 65 items, 12 being positive to the humanistic end of the control continuum and 8 characterizing the custodial extreme. The theoretical range of the scale is from 20 to 100; the higher the score, the more custodial the behavior. A one-way analysis of variance indicated that the scale differentiates among subjects while clustering within subjects. A reliability analysis of the form yielded a coefficient of .92 as estimated by Cronbach's alpha. To test the general hypothesis that there would be a positive relationship between custodialism in educators' pupil control ideology and custodialism in their pupil control behavior, data were drawn from 43 schools (14 elementary, 16 junior highs, and 13 high schools). Students described the pupil control behavior of their teacher, counselor, and principal; teachers, counselors, and principals completed the Pupil Control Ideology Form and a personal data sheet. The general hypothesis was supported. (DB)

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TOWARD DEFINITION AND MEASUREMENT OF PUPIL CONTROL BEHAVIOR

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When schools are analyzed from the perspective of organization theory, it can be shown that they exhibit the characteristics of a general organizational type. Unlike production organizations which deal with inanimate objects, the personnel in "people-changing" organizations work with humans as raw material.[2] The desired end product is an altered person. Moreover, the organization-client relationship is not voluntary in those people-changing organizations that pursue the most thoroughgoing alteration in individuals. Public schools fall into the same category of organizations as prisons and public mental hospitals in that clients have no choice regarding organizational membership; and, similarly, the organization is not free to select its clients.[3]

In such organizations, the motivation, commitment, and hence, the tractability of unselected clients cannot be readily assumed. Discussing schools, mental hospitals, and prison-type organizations, Street and his colleagues have maintained that ". . . with few exceptions . . . <u>these organizations are performing functions crucial to the maintenance of social control.</u>"[4] The pervasiveness of client control as an element in the culture of prisons and public mental hospitals is well documented.[5] Although educational organizations place less emphasis on coercive controls than prisons and public mental hospitals, several studies provide evidence of the prominence of pupil control in school organizations.[6]

While it has been argued that pupil control is a salient concern in educational organizations, it is recognized that schools and individuals vary in their orientations toward pupil control, and in the form and extent to which these orientations are manifested in controlling behavior. Efforts to systematically explain and understand client control in prisons and public mental hospitals have produced some useful conceptual frameworks.[7] One of them examined client control orientations on a custodial-humanistic continuum.

Briefly, custodialism stresses a highly controlled setting concerned primarily with the maintenance of order. Clients are viewed as irresponsible, untrustworthy persons, lacking in respect and obedience and needing strictness, firmness and punishment. In contrast, humanism emphasizes a democratic atmosphere in which individuals are thought capable of self-discipline. Behavior is viewed in psychological and sociological terms rather than in moralistic terms, and clients are perceived as reasonable, trustworthy persons needing sympathetic understanding and permissive regulation.

This typology provides a way of thinking about client control in people-changing organizations; and it can be employed in terms of ideology or in terms of behavior. That is, we can speak of an individual whose ideology concerning client control is relatively custodial or humanistic, and we can speak of an individual whose controlling behavior is relatively custodial or humanistic.

The custodial-humanistic control typology has been employed to examine educator ideology concerning pupil control in school organizations,[8] and numerous investigations utilizing this control conceptualization and its operational measure have been conducted.[9] However, the study of educators' control <u>ideology</u> rather than their

control behavior has furnished only a partial portrait. Obviously, ideology may or may not be reflected in behavior.

> While it seems reasonable to expect a correspondence between ideology and performance in a free situation, such a correspondence in the setting of a formal organization cannot be assumed. The nature of hierarchical relationships, rules, sanctions, and demands from various groups both within and outside of the organization clearly function as intervening variables.[10]

The present investigation builds upon and is companion to the extensive earlier work on pupil control ideology in educational organizations. Specifically, it represents an attempt to define and measure pupil control behavior using the same theoretical framework that guided the earlier inquiries.

METHOD

One of the early decisions that had to be made in our attempt to define and measure pupil control behavior centered on the method of measurement to be used. We were, of course, aware of a number of alternative techniques for measuring behavior, but it was decided that a description questionnaire was the most feasible and appropriate for this initial attempt to map the domain of pupil control behavior. This decision was prompted in no small part by the success previous investigators have experienced using the description questionnaire technique to describe social behavior.[11] We were not unaware of the criticisms of this technique, especially those that have called into question respondents perceptions as a measure of "true" behavior.[12] However, we adopted the symbolic interactionist viewpoint taken by a number of previous developers and users of description questionnaires; i.e., that the technique is justified ". . . more because of than in spite of the susceptibility of these

descriptive statements to projective distortion . . ."[13] The metaphysical problem is avoided by assuming that how an individual <u>really</u> behaves is less important than the way he is <u>perceived</u> to behave, since it is perceptions of social behavior that determine the perceivers' own actions.

In order to measure pupil control behavior, an instrument called the Pupil Control Behavior Form (hereafter the PCB Form) was developed and tested. Construction of the instrument was begun by building an "item pool" of statements describing specific pupil control behaviors. The theoretical definitions of the prototypic extremes developed in the earlier study of pupil control ideology served as a basis for the generation of these behavioral statements. Briefly, a custodial pupil control ideology stresses the maintenance of order, distrust of students, and a punitive, moralistic approach to pupil control. A humanistic ideology emphasizes an accepting, trustful view of pupils and optimism concerning their ability to be self-disciplining and responsible.[14]

In addition to the scale items written by the investigators, members of the first author's graduate classes in research methods contributed statements as an exercise in item construction. An effort was made to divide the items evenly between the custodial and humanistic conceptions of pupil control behavior.

The following criteria were employed in constructing items:

1. Items should be behavioral; they should <u>not</u> describe affect, motives or general traits -- the terms believes, views, feels, and the like, are proscribed.

2. Items should be stated in simple language which will be meaningful to respondents.

3. Items should be short and describe specific behavior -- one idea, not two.

4. Items should be on a low level of abstraction -- e.g., "yells at students"; not "dislikes students".

5. Items should not be such that school policy makes a difference, e.g., corporal punishment.

6. Items should not be so specific as to apply only to teachers; they should be general enough to apply to teachers, counselors, principals, and other public school educators.

7. Items should be written in the present tense.

8. Items should not contain adverbs referring to the frequency with which the behavior occurs -- e.g., often, never, sometimes, etc.

9. Items should not be emotionally or evaluatively toned except as that tone is an inseparable part of the behavior it describes. [15]

A total of 150 scale items was produced by all sources using the above criteria. The items were then screened for ambiguity, wording, content overlap, and the extent to which they tapped the universe of behaviors suggested by the control conceptualization. After the statements had been modified several times and a large number of them deleted, a preliminary form of the PCB measure was constructed consisting of the 65 items that survived the selection procedure. Examples of scale items included: MY TEACHER . . . "Threatens to punish students" (C), "Gets angry at students" (C), "Listens to students' ideas" (H), and "Treats students as if they are as good as adults in school" (H). [16]

A question that arose early in our discussion of methodological considerations concerned the problem of who would respond to the PCB Form. We were aware from previous work that individuals' pupil control behavior can vary depending on the audience and location within the school. When role performance is visible, such

as in halls, assemblies or the cafeteria, it seems reasonable to predict that controlling behavior will be fairly consistent with both normative and formal expectations for pupil control.[17] This is likely to be so even though these expectations may be at odds with individual ideology. However, schools as organizations are characterized by structural looseness which tends to broaden the limits of individual discretion and performance.[18] Teachers, for example, perform in the relative isolation of the classroom out of sight of colleagues and superiors.[19] This role performance invisibility tends to accommodate a closer fit between ideology and behavior.

Teachers comprise the largest segment of the professional staff in schools and it is this role that is directly responsible for the control of pupils. Further, a major segment of teachers' role performance is seen only by students. These considerations, coupled with the fact that students are the objects of control behavior, led us to select pupils as the respondents to the PCB Form.

The 31 custodial and 34 humanistic items were randomized and the initial version of the PCB Form was administered in twenty schools in Illinois (thirteen secondary schools and seven elementary schools). The selected schools varied widely in size and racial mix and they were distributed among urban, suburban and rural areas.

Subjects were randomly drawn from each school and asked to participate in the study. The research was described as simply concerned with students' perceptions of certain aspects of teacher behavior and virtually all of the teachers selected agreed to participate in the study. All data were gathered by the research team. After introducing the team member to the class, the teacher, by pre-arrangement, left the room. In the case of secondary teachers, the class which responded to the PCB Form was randomly selected by the research team member.

A total of 2,815 usable PCB Forms were collected representing student descriptions of 129 of the 130 teachers who participated in the investigation. The mean class size for the sample was 21 students. The response alternatives for the custodial items were weighted 5, 4, 3, 2 and 1 for "always", "often", "sometimes", "seldom", and "never" respectively. Scoring was reversed for the items positive to the humanistic behavior style.

Variation in reports of behavior can be attributed to two sources: First, there is variation due to "real" differences in the actual behavior of those described. Secondly, there is variation due to limitations on the process of reporting, including raters' biases, perceptual ability, and the observability of the behavior to be reported. One index of the utility of a behavior description questionnaire item is the power of the item's responses to differentiate among persons while clustering within persons. Accordingly, as a first check on the adequacy of the PCB Form, a one-way analysis of variance was applied to each of the questionnaire items. The hypothesis tested was that the variance associated with differences among subjects would be greater than the variance associated within respondents describing the same subject.

The analyses of variance comparing the two variance estimates revealed significantly less variation among respondents describing the same teacher than among descriptions of different teachers for each of the 65 PCB Form items. All F ratios were statistically significant well beyond the .001 level of confidence.[20] This analysis tended to add support to the objectivity of the PCB Form items and justified further use of teacher mean scores as a measure of pupil control behavior. In order to determine the discriminating power of the items and construct an internally consistent final form of the instrument, the following iterative procedure was employed.

The score assigned to each subject on an item was the average for the several raters. The total score for each subject was the sum of item scores. Item-scale correlations were computed for each of the 65 scale items and those items with the highest coefficients were grouped to form a new scale. Using the new total score, item-total coefficients were again calculated. Added to the new scale were those items that increased in item-total correlation, while those items that decreased were dropped. This procedure was continued through six iterations until the results appeared to stabilize, that is, until the item-scale correlations changed very little.[21] Item-scale correlations for the 65 items ranged from .16 to .90.

Since all of the items had survived the analysis of variance test, the selection of items for the final PCB Form was based on: (1) the breadth of coverage of control behavior as suggested by the control typology, (2) item-scale correlations, (3) the relative balance between custodial and humanistic items, and (4) the number of items necessary to maintain satisfactory scale reliability, since reliability is in part a function of scale length.

As a result of the preceding analyses, 20 of the original 65 items were retained in the final PCB Form. Twelve of the items are positive to the humanistic end of the control continuum, while the remaining eight items characterize the custodial extreme. Item-scale $\underline{r}$'s for this form range from .68 to .93, with an average of .81 for the twenty items. The theoretical range of the scale is from 20 to 100; the higher the score the more custodial the behavior.

To determine if the final scale differentiated among subjects while remaining relatively homogeneous within subjects, a one-way analysis of variance was applied to the scale. The F ratio was significant beyond the .001 level indicating that the scale does differentiate among subjects while clustering within subjects. Finally, a

reliability analysis of the PCB Form yielded a coefficient of .92 as estimated by Cronbach's alpha.[22]

On the basis of the items comprising the PCB measure, we have attempted to characterize prototypic custodial and humanistic pupil control behavior syndromes: Custodial educators strive to maintain a high degree of order among pupils. These educators are impersonal and aloof in their relationships with students and are stringent and unyielding in dealing with them. Threats and punitive sanctions are used as means of control. Custodial educators manifest suspicion and distrust of pupils, often addressing them in an unpleasant or angry manner. These educators react personally and judgmentally toward students who misbehave.

Humanistic educators strive to establish a basis of mutual respect and friendship in their relationships with pupils. They are patient, congenial and easily approached by students. These educators are responsive to student suggestions and ideas and encourage pupil self-discipline and independence. They are flexible and tolerant in dealing with students and react toward misbehavior on the basis of efforts to understand it.

Custodialism and humanism provide a pupil control typology which represent ideal type polar extremes of a pupil control continuum. The results reported provide evidence that the concepts can be used in thinking about educator styles of control <u>behavior</u> as well as <u>ideology</u> concerning pupil control. The PCB Form appears adequate on technical grounds to operationalize the control typology in terms of behavior; and to serve the purposes of hypothesis - testing inquiry.

IDEOLOGY AND BEHAVIOR: THE TEST OF AN HYPOTHESIS

As discussed earlier in this paper, we were concerned not only with what school personnel think and feel, but perhaps what is more important: what they do. Moreover, we were interested in the relationship between ideology and behavior. The present study addresses this problem and also attempts to set forth a rationale for the hypothesis that custodialism in pupil control ideology will be positively related to custodialism in pupil control behavior.

Although one function of ideology is that of providing an internal guide to action, perfect congruence between ideology and performance cannot be expected. There are at least two factors which inhibit behavior consistent with ideological convictions.

As previously indicated, situational variables including the nature of schools as social organizations and related elements such as norms, role expectations, rules, sanctions, and demands from various internal and external groups function to constrain and modify the behavioral expression of ideology. Intrapersonal characteristics also serve in various ways to induce variations in the manner in which individuals behave. In this connection, Gilbert and Levinson[23] have maintained that the functional significance of an ideology is not the same for different individuals. An ideology held out of superficial conformity to group opinion will not impel action in the same manner as would that ideology subscribed to in a more intense and ego-involved fashion. Performance congruent with belief may also be thwarted by conflicting needs within individuals. Such personality conflicts may result in an internally contradictory or ambiguous ideological orientation not likely to provide the basis for a consistent course of action.

Although the behavioral expression of ideological views may be muted or distorted, it seems reasonable to expect that ideology regarding pupil control will, to a degree, be reflected in pupil control behavior. Hence, the general hypothesis examined here predicted that there would be a positive relationship between custodialism in educators' pupil control ideology and custodialism in their pupil control behavior. Sub-hypotheses specified the general hypothesis to three separate organizational positions within schools, those of teacher, counselor, and principal.

METHOD

To test the hypotheses, data were drawn from 43 schools in Illinois (14 elementary schools, 16 junior high schools, and 13 high schools). The schools were distributed among urban, suburban, and rural areas; and they varied widely in size, community wealth, racial mix, and degree of industrialization. As in the previous instrument development study, teachers, counselors, and principals were selected from each school and asked to participate in the study.

The PCB Form was administered by a member of the research team to students of the teachers selected in each school. The students were asked to describe the pupil control behavior of their teacher, their counselor, and their principal. In addition the teachers, counselors, and principals being described were asked to complete the Pupil Control Ideology (PCI) Form and a personal data sheet which was attached to the PCI Form. The respondents were provided with an envelope which they used to send their materials to the research office. While the anonymity of the respondents was protected, the forms were coded so that they could be matched with the appropriate PCB Form data.

The PCI Form, a twenty-item Likert-type scale was designed to measure pupil control ideology on the custodial-humanistic continuum.[24] Split-half reliability estimates for the instrument ranged from .91 (N=55) to .95 (N=170); the construct validity was supported by the known groups method. Scoring of the instrument is such that the higher the score, the more custodial the ideology of the respondent. Examples of scale items include. "A few pupils are just young hoodlums and should be treated accordingly", "It is often necessary to remind pupils that their status in school differs from that of teachers", and "Pupils can be trusted to work together without supervision" (scoring reversed).

PCB Form descriptions were secured for 397 educators, including 298 teachers, 56 counselors, and 43 principals. However, following a reminder letter, only 377 (95 per cent) returned usable PCI Forms. The usable returns by position were as follows: teachers - 288 (97 per cent), counselors - 54 (96 per cent), and principals - 35 (81 per cent).

RESULTS

To test the hypotheses, correlation coefficients were calculated for the relationship between pupil control ideology and pupil control behavior. Relevant data are presented in Table I.

The general hypothesis was supported. Educators' pupil control ideology was found to be positively related to their pupil control behavior. The data in Table I show also that this relationship was confirmed for the positions of teacher, counselor, and principal as predicted by the sub-hypotheses.

TABLE I

SUMMARY DATA FOR THE RELATIONSHIP BETWEEN PUPIL CONTROL IDEOLOGY AND PUPIL CONTROL BEHAVIOR

Position	N	r	P
All Educators	377	.37	.01
Teachers	298	.29	.01
Counselors	54	.29	.05
Principals	35	.41	.01

Although there is some variation in the magnitude of the correlations between pupil control ideology and pupil control behavior for the various positions, these differences are not statistically significant. A test for the significance of the difference between two r's [25] was applied to compare the largest (.41, principals) and the smallest (.29, teachers) correlations between ideology and behavior. (While the correlation for counselors is also .29, the properties of the test are such that the greater teachers N would result in a larger critical ratio than that yielded if the r's of counselors and principals had been compared). The resulting value of .903 failed to reach the .05 level of significance. Therefore, it seems reasonable to conclude that, for the present sample, there are no significant differences among the organizational positions in the strength of the relationship between pupil control ideology and pupil control behavior.

DISCUSSION

To this point, the development of an instrument to serve as an operational definition for educators' pupil control behavior has been described. This measure

complements the pupil control ideology form. Both devices were used to examine the hypothesis that pupil control ideology and pupil control behavior would be positively related, a prediction supported when tested in separate samples of teachers, counselors, and principals and for the combined group of educators.

While the association of ideology and behavior is significant, the variance accounted for is limited. Thus, pupil control ideology and pupil control behavior are related but, as expected, quite imperfectly. Actually, the design employed in this exploratory effort is too simple to probe adequately the relatively complex ideology-behavior interface. Our first concern was with the construction of the PCB Form. In due course, a variety of social and psychological attributes that may bear upon or be consequences of the PCI-PCB relation can be examined.

For example, power and standing in the social setting seem likely to be associated with ideology-behavior congruence, as do personality factors that suggest autonomy and independence. Job satisfaction, reduced tension levels and perhaps effectiveness in role performance appear to be plausible outcomes of an ideology-behavior concord.

Other empirical possibilities are legion. They range from relatively straightforward investigations of PCB in the same mode that has characterized PCI studies to expanded usages of the PCB Form such as that represented by preferred or desired PCB.

However, while instruments function as research facilitators, they are mere means, tools for the testing of ideas. If the PCI studies have been reasonably successful in the sense that predictions "worked" in a fair share of instances, it is because the measure tapped a salient feature in the social system of the school. Our

prior field study and analyses of the character of the school as a social organization strongly suggested such a direction.

Nevertheless, it is appropriate to close on a cautionary note. Having vented a number of speculations on pupil control, it should be made explicit that studies on the PCB Form itself need to be continued. For example, can we safely refer to teacher pupil control behavior or should we be careful to refer only to student perceptions of teacher pupil control behavior? Also, work to date using the PCB Form with non-teaching positions such as counselor and principal has been based on small samples. Clearly, further investigations are desirable.

FOOTNOTES

1. This research was supported in part by a grant from the Office of Research and Projects, Southern Illinois University at Edwardsville.

2. David Street, Robert D. Vinter, and Charles Perrow, Organization for Treatment (New York: The Free Press, 1966), p. 3.

3. Carlson has developed a typology of service organizations based on whether or not the organization - client relationship is mandatory. See Richard O. Carlson, "Environmental Constraints and Organizational Consequences: The Public School and its Clients, in Daniel E. Griffiths (ed.) Behavioral Science and Educational Administration (Chicago: University of Chicago Press, 1964), pp. 262-76.

4. Street, Vinter and Perrow, op. cit., p. 4.

5. For example, see Donald R. Cressey, "Prison Organizations," and Charles Perrow, "Hospitals: Technology Structure and Goals," in James G. March (ed.) Handbook of Organizations (Chicago: Rand McNally and Co., 1965).

6. See for example, Philip W. Jackson, Life in Classrooms (New York: Holt, Rinehart and Winston, Inc., 1968); Louis M. Smith and W. Geoffrey (pseudonymn), The Complexities of an Urban Classroom (New York: Holt, Rinehart and Winston, Inc., 1967); and Donald J. Willower and Ronald G. Jones, "Control in an Educational Organization," in J. D. Raths et al. (eds.) Studying Teaching (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1967).

7. See Cressey, loc. cit., also Perrow, loc. cit.

8. Donald J. Willower, Terry L. Eidell and Wayne K. Hoy, The School and Pupil Control Ideology (University Park Pa.: Penn State Studies Monograph No. 24, 1967). The adaptation is based upon a study of the control ideology of mental hospital staff members concerning patients. See Doris C. Gilbert and Daniel J. Levinson, "'Custodialism' and 'Humanism' in Mental Hospital Structure and in Staff Ideology," in Milton Greenblatt, Daniel J. Levinson and Richard H. Williams (eds.), The Patient and the Mental Hospital (Glencoe, Illinois: The Free Press, 1957), pp. 20-34.

9. Several of these studies are noted in Donald J. Willower, "Schools as Organizations: Some Illustrated Strategies for Educational Research and Practice," The Journal of Educational Administration, VII (October, 1969), p. 125.

10. Willower, Eidell and Hoy, op. cit., p. 37.

11. See for example, Ralph M. Stogdill and Alvin E. Coons (eds.) Leader Behavior: Its Description and Measurement (Columbus: Ohio State University, 1957); Andrew W. Halpin, The Leadership Behavior of School Superintendents (Chicago: Midwest Administration Center, University of Chicago, 1956); Andrew W. Halpin and Don B. Croft, The Organizational Climate of Schools (Chicago, 1963); Neal Gross and Robert E. Herriott, Staff Leadership in Public Schools: A Sociological Inquiry (New York: John Wiley and Sons, 1965); and Keith F. Punch, "Bureaucratic Structure in Schools and its Relationship to Leader Behavior: An Empirical Study," unpublished doctoral dissertation, University of Toronto, 1967.

12. See, W. W. Charters, Jr., Teacher Perceptions of Administrator Behavior, U. S. Department of Health, Education and Welfare, Office of Education, Cooperative Research Project No. 929 (St. Louis: Washington University, 1964); Donald A. Erickson, "Essay Review: Some Misgivings Concerning a Study of Leadership," Educational Administration Quarterly, I (Autumn, 1965), pp. 52-59; and Donald A. Erickson, "The School Administrator," Review of Educational Research, XXXVII (October, 1967), pp. 417-420.

13. Alan F. Brown, "Reactions to Leadership," Educational Administration Quarterly, III (Winter, 1967), pp. 62-73. Italics in original.

14. Willower, Eidell and Hoy, op. cit., p. 5.

15. A similar set of item criteria were employed by Hemphill and Coons in developing the Leader Behavior Description Questionnaire. See John K. Hemphill and Alvin E. Coons, "Development of the Leader Behavior Description Questionnaire," in Stogdill and Coons, op. cit., pp. 9-10.

16. Items followed by a (C) represent a presumably custodial mode of pupil control behavior; (H) indicates a humanistic behavior mode.

17. Donald J. Willower, "The Teacher Subculture and Curriculum Change," Samplings, I (April, 1968). See Also John S. Packard and Donald J. Willower, "Pluralistic Ignorance and Pupil Control Ideology," Journal of Educational Administration, X (May, 1972).

18. Charles Bidwell, "The School as a Formal Organization," in Handbook of Organizations, op. cit., pp. 975-976.

19. Dan C. Lortie, "The Teacher and Team Teaching: Suggestions for Long-Range Research," in Judson T. Shaplin and Henry F. Olds, Jr. (eds.), Team Teaching (New York: Harper and Row, 1964), pp. 274-75.

20. For more complete details on the development of the PCB Form, see A. Ray Helsel and Donald J. Willower, The School and Pupil Control Behavior, (forthcoming).

21. R. J. Wherry, J. T. Campbell and R. Perloff, "An Empirical Verification of the Wherry Gaylord Iterative Factor Analysis Procedure," Psychometrika, XVI, 1951, pp. 67-74.

22. Lee J. Cronbach, "Coefficient Alpha and the Internal Structure of Tests," Psychometrika, XVI, 1951, pp. 297-334.

23. Doris C. Gilbert and Daniel J. Levinson, "Role Performance, Ideology, and Personality in Mental Hospital Aides," in Greenblatt, Levinson and Williams, op. cit., pp. 197-208.

24. Willower, Eidell and Hoy, op. cit., pp. 47-48.

25. Henry E. Garrett, Statistics in Psychology and Education (New York: David McKay Co., Inc., 1958), pp. 241-242.